

STRICTLY COMMODORE

PROGRAMS FOR VIC-20
PET, CBM, and SuperPET OWNERS.

January/February '83

Volume 1 - No. 1



Programs -

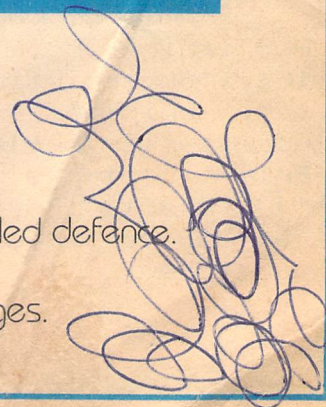
Commodore-Man: Eat all the dots and monsters you can.

Mission ABM: Save western civilization from total destruction.

Quarterback: Try to score touchdowns against the computer-controlled defence.

Tic-Tac-Toe: The standard grid game on the computer.

Lemonade Stand: An educational and business simulation for all ages.



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Contributions in the form of manuscripts with drawings and/or photographs are welcome and will be considered for possible publication. We can assume no responsibility for loss or damage to any material. Payment for the use of any unsolicited material will be made upon acceptance. All contributions should be directed to: Submissions Dept., c/o Strictly Commodore, 47 Coachwood Place N.W., Calgary, Alta., Canada T3H 1E1.

PUBLISHER'S CORNER

WHO SHOULD READ STRICTLY COMMODORE AND WHY

Almost everyone who is involved with Commodore microcomputers - from the rank beginner on up - should read Strictly Commodore. We like to think that reading our publication should be an education. It should help you in getting started and help you grow in sophistication as a microcomputer user.

We recognize that someday, some of our readers will feel that they have outgrown their need for Strictly Commodore. This is inevitable, and in fact, in a way it is one of our goals. If you reach a stage where we are no longer teaching you, we hope that you will stay with us as a contributor and critic of what we are offering.

We are trying to give you, our readers, a unique service in Strictly Commodore. Whether or not you read another publication giving you an overview of the entire microcomputing field, we offer you a publication devoted entirely to Commodore computers. If you have or use a VIC-20, PET, CBM, or SuperPET computer, you should read our software publication Strictly Commodore.

There is a great deal happening in the Commodore microcomputer field and we want to help keep you interested, informed, and up to date. We also would like to hear from you. Let us know what you like and dislike about our publication, what programs you would like us to publish, and the kinds of articles that you would like to see. This can only help us to serve you better.

Send your comments to: Publisher's Corner, c/o Strictly Commodore, 47 Coachwood Place N.W., Calgary, Alta., Canada T3H 1E1.

Roger Olanson,
Publisher of Strictly Commodore

ATTENTION PROGRAMMERS

We suspect that many potential best selling programs are lurking in the back of somebody's Commodore computer, and even more are lurking in the back of somebody's mind. Either way, they're not doing anyone much good.

If you have an interesting (and even possible addictive) program - whether it is recreational, educational, or business - send it to us along with good documentation (typed double-spaced if possible) and a list of variables. If we think it's good, we'll publish it in Strictly Commodore. (Payment will be made upon acceptance of the program.)

Send your programs on disk or tape along with documentation to Strictly Commodore, Submissions Dept., 47 Coachwood Place N.W., Calgary, Alta., Canada T3H 1E1.

ATTENTION AUTHORS

Strictly Commodore is actively seeking well written, informative articles and software reviews for the VIC-20, PET, CBM, and SuperPET microcomputers. This is a chance for authors as well as users to make some money to help pay for their computer addiction and get their efforts out where they can be appreciated.

There are more and more consumer-oriented products on the market for Commodore owners - new computers, peripherals, software, etc. With this in mind, we are looking for articles and product reviews that would be of interest to Strictly Commodore readers. If you have such an article or review, send it to us and it will be considered for possible publication. Payment for the use of any material will be made upon acceptance.

When writing articles and reviews, please keep in mind our criteria, which now includes the following considerations:

- The article should be useful to a large number of our readers.
- The article should be presented in a clear, readable style.
- If it is a product review, the product should be readily available.
- Reviewers should take into consideration all aspects of a particular software package.

Authors should send their articles to:

STRICTLY COMMODORE
Submissions Dept.
47 Coachwood Place N.W.
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PROGRAMMING HINTS AND TIPS

Crash-Proof Inputs On 40-Column PETs

If you are a Commodore PET owner, you must have wondered how to crash-proof your programs. One way is to use the method found in many commercial programs. That is, the RUN/STOP key can be deactivated under BASIC program control. For the old PETs, it is POKE 537,136. For the new PETs, it is POKE 144,88.

Another way to have crash-proof inputs on the PET is to protect the RETURN key on INPUT. For example, try running the program below:

```
10 INPUT"I WOULD LIKE TO KNOW WHAT YOUR NAME IS";A$:GOTO 10
```

You will find that the only way to break into this program is to use the RUN/STOP key (hopefully it is not deactivated!). When you look at the listing, your reaction will be of disbelief. The explanation is simple. The key lies in the length of the INPUT prompt - exactly 38 characters. This configuration puts the INPUT question mark at the end of the input line and the cursor all by itself on the next line. Therefore pressing RETURN = null. The conditional picks up the pieces and you're in business.

If you combine the two ways listed above, you have a nice, crash-proof program that can not be interrupted. If you plan to use these methods in a program, I would advise you to save it before you run the actual program.

A Bug In The Universal Wedge

With each PET/CBM/SuperPET disk drive comes a program that simplifies disk access called "Universal Wedge". Most people don't know that there is a bug in the Universal Wedge that can cause some trouble when it is used on a 4.0 BASIC computer.

The cause of the problem is a small number of Original BASIC ROM computers that required special handling when loading a file. The program checks a location to see if it contains the Original BASIC ROMs. But in 4.0 BASIC, the program mistakes it for Original BASIC ROM, and increments the end of BASIC pointer accordingly. So now the program is one byte too long.

After loading a program, changing it, and saving it again several times, a large number of extra bytes accumulates on the end of the program. This can use up memory, cause some confusion when you're looking for the end of the program, cause some append routines to fail to function, interfere with and even crash certain machine language routines.

To fix the problem, load the Universal Wedge, type POKE 2109,133 and save the new version onto the disk. You now have a version that will work correctly both on Original BASIC and 4.0 BASIC.

Input Error On The VIC-20

There is a serious bug in the original VIC-20 operating system software. The problem appears whenever you print a prompt for an INPUT command and the prompt is longer than 22 characters, causing the line display to wrap. Whenever the prompt causes a line wrap, the prompt is returned along with any characters that are entered from the keyboard. Try running this program:

```

10 INPUT"PLEASE ENTER YOUR LAST NAME";A$
20 PRINT A$

```

The program is expecting a string response to an INPUT command with a string variable (A\$). The response that the program sees in the string variable will contain the entire input prompt plus the characters entered from the keyboard.

The same problem occurs if you use a PRINT command for the prompt and an INPUT command to get the response. This program causes the same problem:

```

10 PRINT"PLEASE ENTER YOUR LAST NAME";
20 INPUT A$
30 PRINT A$

```

To solve this problem, type in this program:

```

10 INPUT"PLEASE ENTER YOUR LAST NAME";A$
20 A$=RIGHT$(A$,LEN(A$)-29)
30 PRINT A$

```

This program will work with any string INPUT as long as you change the last number in Line 20. This number consists of the number of letters in the INPUT statement plus two more (for the question mark and space which follow the statement).

But this solution does not solve the problem when the program is expecting a numeric response to an input command with a floating point (R) or integer (I) variable. If you try this simple little test program, you will quickly see what the problem is:

```

10 INPUT"PLEASE ENTER YOUR FAVOURITE NUMBER";A

```

No matter what you type in, the program will display a REDO FROM START error message, redisplay the input prompt and wait for another input response. To get out of the error condition, try hitting the RETURN key while holding the SHIFT button. Now hit RETURN again without the shift.

To solve the problem with alphanumeric input strings, type in this program:

```

10 PRINT"PLEASE ENTER YOUR FAVOURITE
20 GET B$;IF B$="" THEN 20
30 PRINT B$;:IF B$=CHR$(13) THEN 50
40 A$=A$+B$;GOTO 20
50 A=VAL(A$)
60 PRINT;:PRINT A

```

Look for more programming hints and tips in future issues of Strictly Commodore.

If you have recently run across a programming hint or tip and would like to share it with other readers, then send your name and address along with the information to:

Programming Hints and Tips
c/o Strictly Commodore
47 Coachwood Place N.W.
Calgary, Alta.
Canada T3H 1E1

We will give a \$50 software certificate to the best tip received this year.

Commodore Status Report

Commodore Business Machines appear to be trying to compete with every microcomputer manufacturer by introducing five new machines with list prices ranging from a low of \$179 to a high of \$2995. The low-cost MAX is essentially a game machine, intended to compete with the Atari VCS. The Commodore 64 (\$595 list) which has 64K bytes of memory and a good keyboard may turn out to be the lowest-cost machine capable of running CP/M (we will have a full review of the Commodore 64 in the next issue). With the P128 (list \$995), Commodore is replacing the PET computer. The P128 has 128K bytes of internal memory. It is compatible with PET peripherals. The new B128 (\$1695) and BX256 (\$2995) computers are seen to be replacements for the CBM8032. Both have 80 character by 24-line video displays and built-in disk drives.

Atari and Commodore have accelerated the low-end personal computer price war with discounts on software, peripherals, and basic computer units. This is in response to Texas Instruments' \$100 rebate offer. The result is that the VIC-20 can now be purchased for well under \$200.

This low-end microcomputer price war has forced Commodore to change some of its production and marketing schedules. Production of the VIC, set for 50,000 units a month, has been upped to 70,000 units a month. That in turn has reduced Commodore's commitment to its new game-microcomputer, the MAX Machine. Commodore had planned to place equal marketing emphasis on the VIC and MAX Machine, but it decided to make the VIC its major product for the Christmas season.

The low-end microcomputer price war is not isolated to the U.S. alone. The manager of Commodore in the United Kingdom, upon learning the low price of the new Sinclair ZX Spectrum computer (equivalent to \$194), threatened to bring the price of the VIC-20 down to \$180.

Also on the topic of Commodore in the U.K., there is one significant difference between Commodore over there and Commodore here in America. It is the number of people there who have been there since the first year - and the number of people (especially senior people) in the U.S. who have been in and out in a few weeks. That leads onto the other big difference. Commodore in the U.K. is number one among microcomputer companies. In the U.S., it isn't even number two. Could it be that there is a direct correlation between these two differences?

Commodore has announced 12 new cartridges for the VIC-20. The new games include Cosmic Cruncher, Clowns, Sea Wolf, Super Smash, Money Wars, Menagerie, and Cosmic Jailbreak. The rest of the new cartridges go beyond games and teach while still being fun. Commodore now has 30 cartridges available for the VIC-20.

NEC which planned to introduce its PC-6000 with a price of \$450 is now going through a redesign to eliminate features and reduce the price. Also, NEC is rumored to be designing a very low cost machine to compete with the VIC-20.

One last bit of information. Alan W. Fink, the driving force behind the spectacular rise of the VIC-20, has left Commodore and joined Kornhauser & Carlene Inc., a New York advertising agency. The agency worked closely with Commodore in marketing the VIC-20, before hiring Fink to head its new consumer electronics marketing group. Under Fink's guidance, the VIC-20 contributed to Commodore's 63 percent increase in fiscal 1982 sales.

PROGRAM SECTION

COMMODORE-MAN : In this arcade-style game, you move through the maze and try to eat all the dots that you can. But watch out for the monsters that are chasing you. Nine levels of play.

MISSION ABM : Your job as Civil Defense Commander is simple - destroy the oncoming missiles. The enemy has launched its full nuclear arsenal and you must defend 5 American cities against its powerful missiles. As time passes, the missiles come faster and faster until THE END. Nine challenging skill levels.

QUARTERBACK : You are the quarterback of a professional football team and your job is to win! But the computer-controlled defense can be an awesome opponent. There are 9 skill levels and a time limit for those of you who think they can beat the pros.

TIC-TAC-TOE : Play the standard three-by-three board game against a human opponent. The computer picks the winner and keeps score.

LEMONADE STAND : An educational simulation based on the traditional idea of a lemonade stand. Change the output to a different language (eg. French, German, Spanish) and introduce others to a recreational way to learn another language.

COMMODORE-MAN

This is a game similar to the Pac-Man arcade game. It utilizes PET graphics and has 9 skill levels which determine how "smart" the monsters are going to be. You control the Commodore-Man by using the numeric keypad - 2, 4, 6, and 8 keys - (or the I, J, K, and M keys on the VIC). The object of the game is to move your Commodore-Man and eat the dots that are in the maze, while avoiding the five monsters that roam around.

There are a few circles in the maze; eating one of these allows you to eat the monsters. The time you have to eat them is determined according to your skill level (easiest level is a short time, hardest level is a long time). On the higher levels you need the extra time to eat the dots in the middle of the maze. Occasionally, a monster will become an immobile obstacle in the middle of a passage (which makes the game more difficult). Once you have eaten all the dots, you are advanced to the next level, where the monsters are smarter and you are given an extra man as long as you do not have more than 4 other remaining men. The game ends when you no longer have any Commodore-Men left.

This program was originally written on an 8K PET, but with a few modifications should run on the VIC, CBM, and SuperPET computers (see program conversions). Here is a list of the variables used in Commodore-Man which ought to simplify any changes you may want to make.

Y\$,SK - skill level.
HX,WX - coordinates of Commodore-Man.
OWX,OHX - old coordinates of Commodore-Man.
SCX,HSX - current score, and high score.
DIX - direction of Commodore-Man.
P - position of Commodore-Man.
WVX - number of mazes that the player has gone through.
NDX - number of dots eaten in current maze.
VX - ASCII value of Commodore-Man.
TX - time remaining to eat monsters.
X%() - is monster dead or alive?
E - position of monster being moved.
P%() - ASCII value of what monster is on top of.
HX(),WX() - coordinates of monsters
TCX - total Commodore-Men left.
UX - ASCII value of monster being moved.
D% - is Commodore-Man dead?
T\$ - movement inputs.

Conversions

To CBM/SuperPET- Change line 9 to read: 9 POKE59468,12:PK=32767:SR%=80

To VIC-20- Change line 9 to read: 9 PK=7679:SR%=22. If you are using an 8K memory expander, then change the value of PK to 4096. Change or add the following lines:

```
25 SK=(VAL(Y$)/10)+(WVX/20):DIX=5:VX=115:NDX=0:HX=18:WX=12
150 IFT$="I"THEN DIX=1:GOTO190
160 IFT$="M"THEN DIX=3:GOTO190
170 IFT$="J"THEN DIX=4:GOTO190
180 IFT$="K"THEN DIX=2:GOTO190
190 IFHX<0ANDDIX=1THENHX=23:POKEPK+12,32
210 IFHX>21ANDDIX=3THENHX=-1:POKEPK+496,32
230 IFPEEK(P)=46THENSCX=SCX+10:NDX=NDX+1:GOSUB570:IFNDX>210THEN10
```

```

337 X%(A)=1:DIX(A)=1+INT(RND(1)*2)*2:H%(A)=11:W%(A)=11+INT(RND(1)*2)*2
570 POKE36878,63:FORL=1TO6:POKE36876,210:NEXTL:POKE36876,0
1005 POKE36878,15:FORA=0TO255:POKE36876,A:NEXTA:POKE36876,0
1020 V%=115:POKEPK+H%*SR%+W%,32:W%=12:H%=18:T%=0:GOTO135
30 PRINT"HIGH SCORE".HS%:PRINT" ";
35 PRINT".....";
40 PRINT".....";PRINT".....";
50 PRINT".....";PRINT".....";
60 PRINT".....";PRINT".....";
70 PRINT".....";PRINT".....";
80 PRINT".....";PRINT".....";
90 PRINT".....";PRINT".....";
100 PRINT".....";PRINT".....";
110 PRINT".....";PRINT".....";
120 PRINT".....";PRINT".....";
130 PRINT".....";PRINT" ";
133 IFTCX=1THENPRINT"SPC(14)";:GOTO137
135 PRINT"SPC(15)";:FORA=1TOTCX-1:PRINT" ";:NEXTA

```

```

5 CLR:PRINT"COMMODORE-MAN":PRINT"BY RADU OLANSON"
7 DIMX%(5),P%(5),H%(5),W%(5):TCX=3
9 PK=32767:SR%=40
10 WV%=WV%+1:IFWV%>1THEN25
15 PRINT"WHAT SKILL LEVEL (1-9)";
20 GETY%:IFVAL(Y%)<1THEN20
25 SK=(VAL(Y%)/10)+(WV%/20):DIX=5:V%=115:NOX=0:H%=18:W%=16
27 IFTCX<5THENTCX=TCX+1
28 FORA=1TO5:X%(A)=0:P%(A)=0:NEXTA
30 PRINT"HIGH SCORE".HS%:PRINT" ";
35 PRINT".....";
40 PRINT".....";PRINT".....";
50 PRINT".....";PRINT".....";
60 PRINT".....";PRINT".....";
70 PRINT".....";PRINT".....";
80 PRINT".....";PRINT".....";
90 PRINT".....";PRINT".....";
100 PRINT".....";PRINT".....";
110 PRINT".....";PRINT".....";
120 PRINT".....";PRINT".....";
130 PRINT".....";PRINT" ";
133 IFTCX=1THENPRINT"SPC(20)";:GOTO137
135 PRINT"SPC(22)";:FORA=1TOTCX-1:PRINT" ";:NEXTA
137 P=PK+H%*SR%+W%:GOTO190
140 GETT%=P=PK+H%*SR%+W%:IFT#=""THEN190
150 IFT#="8"THENDIX=1:GOTO190
160 IFT#="2"THENDIX=3:GOTO190
170 IFT#="4"THENDIX=4:GOTO190
180 IFT#="6"THENDIX=2:GOTO190
185 DIX=5

```

```

190 IFHX=<0ANDDI=1THENHX=23:POKEPK+16,32
210 IFHX>21ANDDI=3THENHX=-1:POKEPK+22*SR+16,32
220 GOSUB600:TX=TX-1:IFTX<0THENTX=0:IFPEEK(P)=87THENTX=6+SK*30:GOTO300
230 IFPEEK(P)=46THENSCX=SCX+10:NDX=NDX+1:GOSUB570:IFNDX>=297THEN10
240 IFPEEK(P)=218THENSCX=SCX+(50*WV%):GOSUB800:GOSUB570:GOTO300
250 IFPEEK(P)>46ANDPEEK(P)<>32THENWX=0W:HX=0H:P=PK+HX*SR+W
300 POKEPK+0H*SR+0W,32:POKEP,V
330 DX=0:FORA=1TO5:IFX(A)=0ANDTX>0THEN510
331 IFDX=1THEN510
335 IFX(A)>0THEN340
337 XX(A)=1:H(A)=11:W(A)=14+INT(RND(1)*2)*4
338 P(A)=32:D(A)=2+INT(W(A)/16)*2:GOTO390
340 E=PK+HX(A)*SR+W(A):POKEE,P(A):IFRND(1)>SKTHEN390
350 IFHX<HX(A)ANDPEEK(E-SR)<>102THENDI(A)=1:GOTO390
360 IFHX>HX(A)ANDPEEK(E+SR)<>102THENDI(A)=3:GOTO390
370 IFW<W(A)ANDPEEK(E-1)<>102THENDI(A)=2:GOTO390
380 IFW>W(A)ANDPEEK(E+1)<>102THENDI(A)=4:GOTO390
385 DI(A)=5
390 GX=HX(A):ZX=W(A):ONDI(A)GOSUB400,410,420,430,440:GOTO450
400 H(A)=HX(A)-1:RETURN
410 W(A)=W(A)-1:RETURN
420 H(A)=HX(A)+1:RETURN
430 W(A)=W(A)+1:RETURN
440 DI(A)=RND(1)*4+1:RETURN
450 IFCHX-HX(A)<>0OR(WX-W(A))<>0THEN480
460 IFTX<1THENDX=1:GOTO480
470 SCX=SCX+(50*WV%):XX(A)=0:POKEPK+HX(A)*SR+W(A),V
480 IFHX(A)<0ANDDI(A)=1THENHX(A)=22
485 IFHX(A)>22ANDDI(A)=3THENHX(A)=0
487 E=PK+HX(A)*SR+W(A)
490 IFPEEK(E)<>46ANDPEEK(E)<>32ANDPEEK(E)<>87THENWX(A)=ZX:H(A)=GX:GOSUB900
495 P(A)=PEEK(E):IFP(A)<>46ANDP(A)<>32ANDP(A)<>87THENPX(A)=32
497 UX=90:IFTX>0THENUX=218
500 POKEE,UX
510 NEXTA:IFDX=1THEN1000
520 GOTO140
570 PRINT CHR$(7)
580 PRINT "Score: ";SCX;
590 PRINT " "SPC(5)"=":RETURN
600 OWX=WX:OHX=HX:ONDI(GOSUB610,620,630,640,650:P=PK+HX*SR+W:RETURN
610 HX=HX-1:VX=113:RETURN
620 WX=WX+1:VX=107:RETURN
630 HX=HX+1:VX=114:RETURN
640 WX=WX-1:VX=115:RETURN
650 RETURN
800 FORA=1TO5:IFWX=W(A)ANDHX=H(A)THENXX(A)=0:IFP(A)=46THENSCX=SCX+10
810 NEXTA:RETURN
900 E=PK+HX(A)*SR+W(A):DI(A)=RND(1)*4+1:RETURN
1000 TCX=TCX-1:FORA=0TO255:POKEPK+HX*SR+W,A:NEXTA:IFTX<1THEN1030
1010 FORA=1TO5:POKEPK+HX(A)*SR+W(A),P(A):XX(A)=0:P(A)=0:NEXTA
1020 VX=115:POKEPK+HX*SR+W,32:WX=16:HX=18:TX=0:GETT$:GETT$:DI=5:GOTO133
1030 PRINT " "SPC(12)"GAME OVER";
1035 FORA=1TO1500:NEXTA:PRINT""
1040 PRINT "ANOTHER GAME (Y/N) ?":IFSCX>HSXTHENHSX=SCX
1050 GETT$:IFT$=""THEN1050
1060 IFT$="Y"THENSCX=0:WV=0:TCX=3:PRINT"":GOTO10
1070 IFT$="N"THENPRINT" HIGH SCORE="HSX" "END
1080 GOTO1050

```


Mission ABM

In Mission ABM, you are in control of an ABM (Anti-Ballistic Missile) launching base with which you must protect five cities from the enemy's missiles. The five American cities are displayed at the bottom of the screen. As the game starts, the computer asks you which level you want. Levels 1 through 5 represent the maximum number of missiles that are on the screen at once. Levels 6 through 9 represent the strength of your ABM's as well as the speed of the oncoming missiles. Once you have pressed the space bar, the enemy's missiles (represented by the small graphic symbols) begin to fall from the top of the screen. They fall faster and faster as the game progresses. (To make the game more challenging, increase the value by which SP changes in line 290.)

In order to save your cities, you must launch ABM's to intercept the falling missiles. This is done by steering a "+" around the screen using the numeric keypad - 2, 4, 6, and 8 - (or the I, J, K, and M keys on the VIC-20). Once the "+" is where you would like an ABM to explode (preferably on top of a missile), you press the space bar. If the explosion is close enough to the enemy's missile, it will detonate. For each missile destroyed, you get 10 points.

Missile Command fans should be warned that Mission ABM does not have the advanced features that Missile Command does, such as splitting missiles, planes, killer satellites, etc., but it is still a fun, challenging game. The program was originally written on an 8K PET (see the conversions for VIC and CBM/SuperPET).

The following variables are used in Mission ABM :

SK - skill level.

XX - maximum number of missiles visible at any time.

SP - the speed of missiles.

CY() - placing of city on the screen.

W() - motion of missiles across the screen.

AH(),AW() - current position of missiles.

HA(),WA() - old position of missiles.

X() - current status of each missile (dead or alive).

XT - total number of missiles on the screen.

CI() - current status of each missile (intact or destroyed).

N - the missile being maneuvered.

P - position of missile.

CM() - city that missile tries to hit.

YH,YW - current coordinates of target.

HY,WY - old coordinates of target.

SH - is an ABM being fired?

OH,TA - coordinates for firing.

TN - total number of cities destroyed.

SC,HS - current score, and high score

Conversions

To CBM/SuperPET - Take out the semi-colon at the end of lines 65 through 90. Change the following lines:

15 POKE59468,12:PK=32767:SR%=80

700 T=PEEK(151):IFT=255THEN760

710 HY=YH:WY=YW:IFT=184ANDYH>2THENYH=YH-1:GOTO760

720 IFT=180THENYW=YW-1:IFYW<2THENYW=40

730 IFT=182THENYW=YW+1:IFYW>40THENYW=2

740 IFT=178ANDYH<17THENYH=YH+1:GOTO760

750 IFT=32ANDSH=0THEN770

```
70 "      ^          | | | | | | | | | | | | | | | | | | | | | |";  
80 "  A T H I L I Z E D   | | | | | | | | | | | | | | | | | | | |";  
430 PRINTTAB(T%)"  .0001.  .00001.  .0001." NYC PHIL WASHI BUFF BALT";
```

```
440 PRINT"";PRINTTAB(T%-3)"    ";;FORA=1TO5:PRINT"          "    ":NEXTA
```

```

450 PRINTTAB(T%-3)"_____";
475 REM:END OF GAME
480 TN=0:FORB=1TO5:IFCI(B)>1THENTN=TN+1
490 NEXT B:IF TNC5 THEN 200
494 IF SC>HS THEN HS=SC
498 PRINT"§";TAB(4);"§SCORE=";SC;"§";TAB(22);"HIGH SCORE=";HS
500 FORA=1TO10:GETT$:NEXTA
510 INPUT"§§§§DO YOU WANT TO PLAY AGAIN (Y/N)";T$
520 IFT$="Y"THEN20
540 END
599 REM:MOVING TARGET AND SHOOTING MISSILES
600 X=0:IFSH=0THEN700
605 SH=SH+1:ONINT(SH)GOTO610,610,625,640,670
610 POKEPK+OH*SR%+TA,81:FORA=1TO5
615 IFINT(AH(A))=INT(OH)ANDINT(AW(A))=INT(TA)ANDX(A)>0THENX(A)=0:SC=SC+10
620 NEXTA:GOTO700
625 POKEPK+OH*SR%+TA,160:FORA=1TO5
630 IFINT(AH(A))=INT(OH)ANDINT(AW(A))=INT(TA)ANDX(A)>0THENX(A)=0:SC=SC+10
635 NEXTA:GOTO700
640 IFSK>7THENSH=0:POKEPK+OH*SR%+TA,32:GOTO700
645 PRINT"§";:FORB=2TOOH:PRINT"§";:NEXTB:SH=0
650 PRINTSPC(TA-2)"§  §§§§§§§§  §§§§§§§§  §";
655 FOR A=1TO5:IFAH(A)<OH-1ORAH(A)>OH+2THEN665
660 IFAW(A)>TA-1ANDAW(A)<TA+2ANDX(A)>0THENX(A)=0:SC=SC+10
665 NEXTA:FORA=1TO50:NEXTA:PRINT"§§§§§  §§§§§  §§§§§  "
670 IFSK>5THENSH=0:GOTO700
675 PRINT"§";:FORB=2TOOH:PRINT"§";:NEXTB:SH=0
680 PRINTSPC(TA-2)"§  §§§§§§§§  §§§§§§§§  §";
685 FOR A=1TO5:IFAH(A)<OH-1ORAH(A)>OH+2THEN695
690 IFAW(A)>TA-1ANDAW(A)<TA+2ANDX(A)>0THENX(A)=0:SC=SC+10
695 NEXTA:FORA=1TO50:NEXTA:PRINT"§§§§§  §§§§§  §§§§§  "
700 T=PEEK(547):IFT=64THEN760
710 HY=YH:WY=YW:IFT=50ANDYH>2THENYH=YH-1:GOTO760
720 IFT=42THENYW=YW-1:IFYW<2THENYW=40
730 IFT=41THENYW=YW+1:IFYW>40THENYW=2
740 IFT=18ANDYH<17THENYH=YH+1:GOTO760
750 IFT=6ANDSH=0THEN770
760 POKEPK+HY*SR%+WY,32:POKEPK+YH*SR%+YW,91:RETURN
770 X=0:FORA=1TO5:IFINT(AH(A))=YHANDINT(AW(A))=YWANDX(A)>0THENX(A)=0:SC=SC+10
780 NEXTA:TA=YW:OH=YH:POKEPK+OH*SR%+TA,46:SH=1:RETURN

```

Quarterback

Quarterback is a two player simulation of the game of football. As the quarterback of your NFL team, you must control your offense against the computer-controlled defense.

At the start of the game you must choose from nine levels of play (which determines the degree of quickness of the defense). You are given 60 minutes in which to mount a higher score than your opponent and win the game. At halftime, the computer will briefly interrupt the game and give you the current score.

To move the quarterback, you use the I, J, K, and M keys. You can run, fake, punt, and kick. After you lose possession of the ball, your opponent gets a chance to be the opposing team's quarterback.

This program was written for the 40-Column PET computer (VIC-20 and CBM/SuperPET owners should see program conversions). Here are the variables used in Quarterback:

H\$,V\$ - the two opposing teams.
PP - who's turn is it at quarterback?
TT,TU,T - time function variables.
SK - skill level.
HQ,WQ - current co-ordinates of the quarterback.
QH,QW - old co-ordinates of the quarterback.
KI - length of kick.
RE - length of kick/punt return.
YY - current yardline.
Y - how many yards to go for a 1st down.
DO - current down.
HS,VS - score of each team.
H(),W() - current co-ordinates of defensive players.
I(),X() - old co-ordinates of defensive players.
T\$,Y\$,D\$ - string inputs.
TA - is the quarterback tackled?
HT% - is it halftime?
P\$ - what team gets first possession?
P - length of punt.
FG - field goal attempt kick.

Conversions

To CBM/SuperPET - Change the following lines:

```
3 GETT$:SK=VAL(T$)/10:POKE59468,12:PK=32767:SR%=80:IFSK<.1THEN3
23 H(10)=4:HQ=10:W(1)=40+(-3*PP):W(2)=40:W(3)=40:W(4)=40:W(5)=40:WQ=40
+(7*PP)
```

To VIC-20 - Change the following lines:

```
3 GETT$:SK=VAL(T$)/10:PK=4096:SR%=22:IFSK<.1THEN3
23 H(10)=4:HQ=10:W(1)=11+(-3*PP):W(2)=11:W(3)=11:W(4)=11:W(5)=11:WQ=11
+(7*PP)
```

If you are using a 3K memory expander or less, then you should change the value of PK in line 3 to equal 7679.

```

1 CLR:PRINT"Q QUARTERBACK":INPUT"Q HOME TEAM":H$:H$=RIGHT$(H$,9):TT=60:PP=1
2 INPUT"Q VISITING TEAM ":V$:V$=LEFT$(V$,9):PRINT"WHAT SKILL LEVEL (1-9)";
3 GETT$:SK=VAL(T$)/10:POKE59468,12:PK=32767:SR%=80:IFSK<.1THEN3
4 GOSUB2000:HQ=13:KI=40+INT(RND(1)*30):RE=5+INT(RND(1)*20):PRINT"Q"
5 PRINT"THE KICKOFF IS"KI"YARDS.":PRINT"Q THE RETURN IS"RE"YARDS.":YY=65-KI+RE
6 DO=1:Y=10
7 IFYY>50THENY1=100-YY:Y$="OPPOSITE"
8 IFYY<51THENY1=YY:Y$="YOUR OWN"
9 PRINT"Q DO"DOWN AND"Y"ON "Y$:Y1"YARDLINE.":GOSUB10000:GOSUB5000
10 T=TT-TU:IFINT(TU)<>TUTENTU=(INT((TU-.01)*100))/100:GOTO10
11 PRINT"Q":T=(INT(T*60))/100:TU=0
12 PRINTV$TAB(11)H$:PRINTTAB(3)V$TAB(14)H$:PRINT"TIME="INT(TT)"":INT(T*100)
15 FORA=1TO15:FORB=1TOSR%-1:PRINT"Q B":NEXTB:PRINT"":NEXTA
21 H(1)=10:H(2)=15:H(3)=12:H(4)=8:H(5)=5:H(6)=16:H(7)=13:H(8)=10:H(9)=7
23 H(10)=4:HQ=10:W(1)=40+(-3*PP):W(2)=40:W(3)=40:W(4)=40:W(5)=40:WQ=40+(7*PP)
25 FORA=6TO10:W(A)=SR%/2+(3*PP):NEXTA:GOSUB5000
50 FORA=1TO10:POKEPK+H(A)*SR%+W(A),102:NEXTA:POKEPK+HQ*SR%+WQ,145
60 FORA=1TO10:I(A)=H(A):X(A)=W(A):NEXTA:QW=WQ:QH=HQ:TT$=T$
70 GETT$:IFT$=""THEN T$=TT$
80 IFT$="M"THENHQ=HQ+1:GOTO120
90 IFT$="I"THENHQ=HQ-1:GOTO 120
100 IFT$="J"THENWQ=WQ-1:GOTO120
110 IFT$="K"THENWQ=WQ+1
120 IFWQ<1THENWQ=1:IFPP=1THEN500
130 IFWQ>SR%THENWQ=SR%:IFPP=-1THEN500
140 IFHQ<30RHQ>17THEN500
145 POKEPK+QH*SR%+QW,160:POKEPK+HQ*SR%+WQ,145
150 FORA=1TO10:IFTA=1THEN470
152 IFRND(1)>SKTHEN200
155 IFPP=-1ANDAC<6THEN170
160 IFWQ<W(A)THENW(A)=W(A)-1:IFRND(1)>SKTHEN200
165 IFPP=1ANDAC<6THEN180
170 IFWQ>W(A)THENW(A)=W(A)+1:IFRND(1)>SKTHEN200
180 IFHQ>H(A)THENH(A)=H(A)+1:IFRND(1)>SKTHEN200
190 IFHQ<H(A)THENH(A)=H(A)-1
200 POKEPK+I(A)*SR%+X(A),160:POKEPK+H(A)*SR%+W(A),102
460 IFH(A)=HQANDW(A)=WQTHEN TA=1
470 NEXTA:TT=TT-.05:IFTA=0THEN60
500 TA=0:IFPP=1THENYY=YY+((SR%/2+2)-WQ):GOTO510
507 YY=YY+(WQ-(SR%/2-2))
510 IFYY=>100THEN1300
512 IFYY=<0THEN1200
515 PRINT"Q";
530 DO=DO+1:IFPP=1THENY=Y-((SR%/2+2)-WQ):GOTO540
535 Y=Y-(WQ-(SR%/2-2))
540 IFY=<0THENDO=1:Y=10:IFY=<0THEN1200
555 IFHT%=0ANDTT<=30THEN2500
560 IFTT=<0THEN2400
562 IFDOWN<4THEN 7
565 IFDOWN>4THEN700
567 PRINT"Q4 DOWN AND"Y"YARDS TO GO.DO YOU WANT TO"
575 PRINT"Q P-PUNT, K-KICK, OR R-RUN ?";
577 GETD$:IFD$=""THEN577

```

```

580 IFD$="P"THEN1000
585 IFD$="K"THEN1100
590 IFD$="R"THEN10
600 GOTO577
700 P$=H$:IFPP=-1THENP$=V$
710 PRINT"□":PRINT"LOSS OF POSSESSION FOR "P$".":P$=V$:IFPP=-1THENP$=H$
725 PRINTP$" NOW HAS THE BALL ON THE "YY"YARDLINE":PP=-PP:GOSUB5000:GOTO6
1000 PRINT"□"
1010 P=30+INT(RND(1)*20):RE=INT(RND(1)*15)
1020 PRINT"THE PUNT TRAVELS"P"YARDS.":PRINT"THE RETURN IS"RE"YARDS."
1040 YY=100-YY-P+RE:IFY<1THENPRINT"IT'S A TOUCHBACK.":YY=20
1050 PP=-PP:GOSUB5000:GOTO6
1100 FG=35+INT(RND(1)*30):PRINT"THE KICK TRAVELS"FG"YARDS.":G=100-YY
1105 IFFG-10<100-YYTHENPRINT"IT'S SHORT.":GOTO1180
1130 IFRND(1)<.15THENPRINT"IT'S WIDE TO THE LEFT.":GOTO1180
1140 IFRND(1)>.85THENPRINT"IT'S WIDE TO THE RIGHT.":GOTO1180
1150 PRINT"THE"G"YARD FIELD GOAL ATTEMPT IS GOOD.":IFPP=1THENHS=HS+3:GOTO1180
1170 VS=VS+3
1180 PP=-PP:YY=20:GOSUB5000:GOTO6
1200 PRINT"THE QUARTERBACK IS SACKED FOR A SAFETY.":IFPP=1THENVS=VS+2:S$=H$
1220 IFPP=-1THENHS=HS+2:S$=V$
1240 PRINT"S$" WILL PUNT FROM ITS OWN 20 YARDLINE.":YY=20:GOTO 1010
1300 PRINT" TOUCHDOWN":FORM=1TO1000:NEXTW
1310 IFPP=1THENHS=HS+6:T$=H$:GOTO1320
1315 T$=V$:VS=VS+6
1320 PRINTT$'S EXTRA POINT IS UP,";
1330 FORM=1TO1000:NEXTW:IFRND(1)>.85THENPRINT" AND IT IS WIDE.":GOTO1360
1340 PRINT" AND IT IS GOOD.":IFPP=1THENHS=HS+1:GOTO1360
1350 VS=VS+1
1360 PP=-PP:GOSUB5000:GOTO4
2000 IFRND(1)<.51THENPP=1:R$=H$:GOTO2020
2010 PP=-1:R$=V$
2020 PRINT"R$" WILL RECEIVE THE KICKOFF":GOSUB5000:RETURN
2400 PRINT"IT IS THE END OF THE GAME."
2410 PRINT"THE SCORE IS:":PRINTH$TAB(10)H$TAB(25)V$TAB(36)VS
2420 PRINT" ":END
2500 HTX=1:TT=30:PRINT"IT IS HALFTIME."
2510 PRINT"THE SCORE IS:":PRINTH$TAB(15)HS:PRINTV$TAB(15)VS
2520 PRINT"ENTER A LETTER TO START THE SECOND HALF "
2525 GETT$:IFT$=""THEN2525
2530 IF R$=H$THEN PP=-1:R$=V$:GOTO 2550
2540 R$=H$:PP=1
2550 PRINT"R$" WILL RECEIVE THE KICKOFF."
2560 HQ=13:KI=40+INT(RND(1)*30):RE=5+INT(RND(1)*20):PRINT":GOSUB5000:GOTO5
5000 FORM=1TO2000:NEXTW:RETURN
10000 TU=(INT(TT*100))/100:TT=TU:RETURN

```


Tic-Tac-Toe

This program is the standard three-by-three board game done on the computer. The game is played between two human opponents. The computer alternates turns, decides who wins, and keeps the total score (number of wins by each player).

Tic-Tac-Toe was originally written on a CBM 8032 computer (VIC-20 and PET owners see conversions). Here are the variables used in this program:

N\$() - names of the two players.
W() - number of wins for each player.
S() - which player owns each square.
W% - has the game been won?
T% - is the game a draw?
H,W - co-ordinates of X or O being drawn onto the screen.

Conversions

To PET - Delete line 5. Change the following lines to read:

```
270 T=32767+40*3+H*40+W:POKET,79:POKET+1,80
280 POKET+40,76:POKET+41,122:GOTO310
290 T=32767+40*3+H*40+W:POKET,77:POKET+1,78
300 POKET+40,78:POKET+41,77
```

To VIC-20 - This program will run on a VIC-20 with a 3K memory expander or less. Delete line 5. Change the following lines to read:

```
270 T=7679+22*3+H*22+W:POKET,79:POKET+1,80
280 POKET+22,76:POKET+23,122:GOTO310
290 T=7679+22*3+H*22+W:POKET,77:POKET+1,78
300 POKET+22,78:POKET+23,77
```

5 PRINTCHR\$(142):REM : THIS LINE IS FOR ONLY CBM 8032 MACHINES

9 REM:INITIALIZATION

10 DIMN\$(3),W(3),S(9)

20 PRINT" TIC-TAC-TOE":PRINT" "

30 INPUT"NAME OF 'X' PLAYER ";N\$(1):INPUT"NAME OF 'O' PLAYER ";N\$(2)

40 FORX=1TO9:S(X)=0:NEXTX:PRINT" 1 2 3"

50 PRINT" | | "

60 PRINT" | | "

70 PRINT" | | "

80 PRINT" _____"

90 PRINT" 4 | 5 | 6"

100 PRINT" | | "

105 PRINT" | | "

110 PRINT" | | "

120 PRINT" _____"

130 PRINT" 7 | 8 | 9"

140 PRINT" | | "

150 PRINT" | | "

160 PRINT" | | "

```

199 REM:MAIN PROGRAM
200 FORX=1TO2:TX=0:IFW%=1THENNEXTX:GOTO510
210 FORY=1TO9:TY=TX+INT(.5+S(Y)/2):NEXTY
215 IFTX>8THENTX=10:GOTO310
220 PRINT" ";N$(X);", PICK A SQUARE (1-9) ?"
230 GETT$:IFVAL(T$)<1THEN230
240 TX=VAL(T$):IFS(TX)>0THEN230
250 S(TX)=X:H=INT((TX-1)/3)*5:W=(TX-(H*.6))*7-4
260 IFX=1THEN290
270 T=32767+80*3+H*80+W:POKET,79:POKET+1,80
280 POKET+80,76:POKET+81,122:GOTO310
290 T=32767+80*3+H*80+W:POKET,77:POKET+1,78
300 POKET+80,78:POKET+81,77
310 GOSUB400:NEXTX:IFTX>9THEN500
330 PRINT" "
340 PRINT" "
350 PRINT" "
360 PRINT" "
370 PRINT" "
380 GOTO200
399 REM:IS THERE A WINNER?
400 IFS(1)=XANDS(2)=XANDS(3)=XTHENW%=1:GOTO490
410 IFS(4)=XANDS(5)=XANDS(6)=XTHENW%=1:GOTO490
420 IFS(7)=XANDS(8)=XANDS(9)=XTHENW%=1:GOTO490
430 IFS(1)=XANDS(4)=XANDS(7)=XTHENW%=1:GOTO490
440 IFS(2)=XANDS(5)=XANDS(8)=XTHENW%=1:GOTO490
450 IFS(3)=XANDS(6)=XANDS(9)=XTHENW%=1:GOTO490
460 IFS(3)=XANDS(5)=XANDS(7)=XTHENW%=1:GOTO490
470 IFS(1)=XANDS(5)=XANDS(9)=XTHENW%=1:GOTO490
480 RETURN
490 W(X)=W(X)+1:PRINT" ";N$(X);" HAS WON THIS GAME.":RETURN
499 REM:THE GAME IS A DRAW
500 PRINT" ";N$(X);" THE GAME IS A DRAW."
510 W%=0:FORX=1TO2000:NEXTX
515 PRINT"TOTAL SCORE: ";N$(1);"=";W(1);" ";N$(2);"=";W(2)
520 PRINT"DO YOU WANT TO TRY AGAIN (Y/N) ?"
530 GETT$:IFT$=""THEN530
540 IFT$<>"Y"THEN570
550 W(3)=W(1):W(1)=W(2):W(2)=W(3):N$(3)=N$(1)
560 N$(1)=N$(2):N$(2)=N$(3):GOTO40
570 IFT$<>"N"THEN530
580 PRINT"FINAL SCORES: ";N$(1);N$(2)
590 PRINTW(1),W(2):END

```

Lemonade Stand

This multi-player game can be an invaluable educational tool to teachers of all grades. It can also be a recreational game for younger children.

Lemonade Stand was tested by a French teacher in a local high school in Calgary. By changing the output to French, the teacher used the program in his classroom. The program introduced students to the computer in a recreational way while still teaching them French.

The program will simulate a total time period of two months (October and November). At the end of each day, the computer will display each player's results. To continue to the next day, you must press the space bar. To abruptly end the game you would press the letter 'E' instead of the space bar.

Lemonade Stand will run as is on all Commodore computers. On the VIC-20, output lines might have to be abbreviated due to the VIC's limited screen area. Here is the list of variables:

SU - price of sugar per glass.
PA - price of advertising signs.
TA - municipal taxes per day.
CI - price of lemons per glass.
DA\$ - month.
DA - day of the month.
D\$() - types of weather.
D() - how well the lemonade will sell.
TE - types of temperature.
Z - random weather.
Y - temperature picked according to weather.
GR - number of players.
TP() - total money for each player.
B\$() - number of advertising signs (per day).
A\$() - number of glasses of lemonade made (per day).
E() - price per glass of lemonade (each day).
C\$() - number of glasses of lemonade that you could sell (each day).
PR() - daily profit for each player.

```
10 PRINTCHR$(142):REM: THIS LINE IS ONLY FOR CBM 8032
19 REM: INITIALIZATION
20 CLR:PRINT"  LEMONADE STAND"
30 SU=.1:PA=1:TA=.5:CI=.1:COX=0:DA=7:DA$="OCTOBER"
40 FORX=1TO6:READD$(X),D(X),TE(X):NEXTX
45 INPUT"HOW MANY PLAYERS (1-10) 1";GR:IFGR<1THEN45
50 DATA "IT IS HOT.",9,20,"IT IS NICE.",7,15
60 DATA "IT IS CLOUDY.",5,10,"IT IS RAINING.",3,2
70 DATA "IT IS SNOWING.",1,-10,"IT IS VERY HOT",10,25
80 FORN=1TOGR:TP(N)=20:NEXTN
89 REM: START OF EACH DAY
90 Z=INT(RND(1)*6+1)
100 Y=INT(TE(Z)+((RND(1)*8-3.5)))
101 SU=SU+(RND(1)/100-.005)
102 CI=CI+(RND(1)/100-.005)
103 PA=PA+(RND(1)/50-.01)
104 TA=TA+(RND(1)/10-.05)
```

```

105 FORN=1TOGR
106 PRINT"PLAYER #\"N\": \"
107 PRINT\"DATE: \"DA$;DA\", 1982.\"
108 PRINT\"WEATHER: \"D$(Z)
109 PRINT\"TEMPERATURE: \"Y\"C.\"
110 PRINT\"THE PRICE OF SUGAR : $\";INT(SU*100)/100
120 PRINT\"THE PRICE OF LEMONS : $\";INT(CI*100)/100
130 PRINT\"THE PRICE OF GLASSES : $ .03\"
140 PRINT\"THE PRICE OF ADVERTISING SIGNS : $\";INT(PA*100)/100
150 PRINT\"THE MUNICIPAL TAXES : $\";INT(TA*100)/100
160 PRINT\"YOUR MONEY : $\";INT(TP(N)*100)/100
170 INPUT\"HOW MANY ADVERTISING SIGNS ARE YOU MAKING (0-10) \"B$(N);B$(N),
175 IFB$(N)<0ORB$(N)>10ORB$(N)<>INT(B$(N))THEN170
180 INPUT\"HOW MANY GLASSES OF LEMONADE DO YOU WANT TO MAKE \"A$(N);A$(N)
185 PRINT:IF A$(N)<0OR A$(N)>INT(A$(N))THEN180
190 INPUT\"WHAT PRICE DO YOU WANT TO CHARGE PER GLASS (IN DOLLARS) \"E$(N);E$(N)
195 IFE$(N)<0THEN190
199 REM: CALCULATE THE PROFIT
200 A(N)=INT((B$(N)*PA)*100)/100:B(N)=INT((A$(N)*(SU+CI+.03))*100)/100
210 C$(N)=INT(RND(1)*(B$(N)/1.5)+1)*(1.2-E$(N))*D(Z)*((Y+25)/10)
212 IFC$(N)>A$(N)THENC$(N)=A$(N)
213 IFC$(N)<0THENC$(N)=0
215 PR(N)=C$(N)*E$(N)-B(N)-A(N):TP(N)=TP(N)+PR(N)
216 IFTP(N)>0THEN220
217 PRINT\"YOU ARE VERY DUMB. YOU DO NOT HAVE ENOUGH MONEY.\"
218 FORX=1TO5000:NEXTX:TP(N)=TP(N)-PR(N):IFTP(N)<2THENTP(N)=2
219 GOTO107
220 NEXTN
224 REM: PRINT THE DAY'S RESULTS
225 FORN=1TOGR:PRINT\"RESULTS FOR PLAYER #\"N\": \"
230 PRINT\"THE COST OF ADVERTISING SIGNS : $\"A(N)
240 PRINT\"THE COST OF\"A$(N)\"GLASSES OF LEMONADE : $\";B(N)
250 PRINT\"YOU SOLD\"C$(N)\"GLASSES OF LEMONADE.\"
260 PRINT\"YOUR PROFIT FOR TODAY IS : $\"INT(PR(N)*100)/100
270 PRINT\"PRESS THE <<< SPACE BAR >>> TO CONTINUE.\"
280 GETT$:IFT$=\"E\"THEN500
283 IFT$<>\" \"THEN280
289 REM: INCREASING THE DATE
290 NEXTN:DA=DA+1:IFDA<31THEN90
300 DA=1:IFDA<>\"OCTOBER\"THEN500
310 DA$=\"NOVEMBER\":GOTO90
499 REM: END OF THE PROGRAM
500 PRINT\"THE GAME IS OVER.\"
510 FORN=1TOGR:PRINT\"THE PROFIT FOR PLAYER #\"N\"IS $\"INT(TP(N)*100)/100\". \"
520 NEXTN:END

```

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Double K-Byters: A Programming Challenge

Strictly Commodore is inviting its readers to submit "Double K-Byters". A Double K-Byte is a BASIC program which fits in 2K (2048 bytes) of program memory. There aren't any restrictions on the nature of the program, other than its size. It can be a graphics display, a game, a mini-adventure, or anything that your imagination and programming skills can create.

Note that the program does not have to run in 2K of memory; it can use as much RAM for arrays, strings, graphics mapping, etc., as you need. We'd prefer that it be able to run on a 16K computer, but this is not an absolute limit.

Here are the official rules to this challenge:

1. The program must be written for the PET, VIC-20, CBM, or SuperPET, entirely in BASIC (although it may create and call Machine Language routines).
2. The program must occupy no more than 2048 bytes of memory before running.
3. The program must be submitted on tape or disk, accompanied by your name, address, phone number, and a written description of its operation.
4. Winners will have their programs published in Strictly Commodore and will receive \$10 for their programming excellence.

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Review:

PEDISK II

Pedisk II is a low-cost, high-performance floppy-disk system for the Commodore PET/CBM series of computers. It is available with 5 1/4 inch or 8 inch disk drives. A small 2 1/2 inch by 5 inch disk controller board mounts inside the machine and contains the PDOS software ROM and all the disk control circuitry. One, two, three drives connect to the Pedisk II controller board, providing a fast mass storage system for the 2000, 4000 and 8000 series computers.

Pedisk II is compatible with all Commodore disk systems, and both can be used simultaneously in the same machine. With appropriate software, files can be transferred from one disk system to the other. The 8 inch Pedisk II system can exchange diskette with large computers. The PDOS software links the resident BASIC to the disk system by adding a new repertoire of disk commands.

The single drive 5 1/4 inch system sells for \$595 and offers 143K bytes of storage. The dual drive 5 1/4 inch quad-density system provides 572K bytes of high speed storage and retails for \$1195.

For more information about either the 5 1/4 inch or 8 inch disk drives, contact CGRS Microtech Inc., P.O. Box 102, Langhorne, PA 19047.

Review:

VIXEL #1

Vixel #1, for the VIC-20, is a three-in-one program package published by The Code Works, creators of Cursor for the PET. For \$12.95 you receive three good programs that can keep VIC owners tied to their computer for hours. With the package comes a booklet which gives you the instruction for each program.

At the start of the tape is a program called "Cover". (This program is very similar to the first program found in each Cursor tape). In this introductory program, the custom characters of the VIC are used to create the Vixel mascot which moves across the screen, chalking out each letter of "Vixel #1" and at the same time tapping his feet and blinking his eyes.

After this demonstration, the program lists the three other programs available on the tape. Then, the user loads the program of his choice.

The first program is called "Fire". In this game, you are the pilot of helicopter that is trying to put out a skyscraper fire with the water in its tanks. You have three minutes to extinguish the fire and your tanks may only hold 1000 gallons of water.

Unfortunately, the program does not use the VIC's custom characters, and there is nothing special about the program itself that any knowledgeable programmer couldn't figure out.

The next program, "Draw", allows you to draw in high-resolution mode some detailed pictures within a 13x14 character-wide box in the middle of the VIC screen. Using the control keys, you draw, erase, or move the cursor around at your pleasure. There is also an option to SAVE the whole drawing for later viewing.

The third and final program is called "Race". In this game, you control a race car and are trying to earn as many points as possible before the computer's car crashes into you. You start each race with three race cars, and the game is over when you've managed to crash all three of them.

This is the best of the three programs and it uses the special VIC characters to create the maze.

Although the games are rather simple, Vixel #1 is a fairly good investment for the VIC-20 owner. This tape is oriented for the novice programmers and would be useful to anyone starting out with computers.

Vixel #1 comes on a tape for the unexpanded VIC and includes an instruction booklet. It is available from The Code Works, Box 550, Goleta, CA 93116.

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NEW PRODUCTS

Product: Graphvics (VIC-20)

Price: \$25.00

Rating: Good

A program that gives the VIC user both Hi-resolution and Multicolor display modes. Graphvics gives you two screens - one for normal text and the other for graphics display. The function keys allow you to switch back and forth between the two screens. On the graphics screen, you control over 24,000 individual points. And you can mix both hires and multicolor modes on the same screen to create graphic pictures. Graphvics will run on any VIC that has either a 3K or 8K expander. It comes on cassette or diskette with the user's manual and sample programs. Price is \$25 in the U.S. and Canada, \$30 elsewhere. Abacus Software, P.O. Box 7211, Grand Rapids, MI 49510.

Product: Understanding Your VIC

Price: \$13.95

Rating: Good

Understanding Your VIC Volume I: Basic Programming is a 148 page, softcovered book that uses a step-by-step approach to help the beginner, quickly and easily learn about the VIC. It is full of exercises and examples. Many exercises show expected results so that the recorder has immediate feedback on errors. There are chapters on the VIC colour and sound features that use these program design techniques to build demonstration programs. The color and sound demonstration programs are both available on a single cassette for \$8.95. TIS, Box 921, Los Alamos, NM 87544.

Product: Starfighter Joystick

Price: \$16.95

Rating: Excellent

A durable VIC-20 joystick controller complete with a two year factory limited warranty. The joystick is accurate and easy to hold for long periods of time. Starfighter is designed with an advanced mechanism that transfers movement directly from the user's hand to the internal contacts. Its rounded shape helps to eliminate the muscle fatigue encountered when using other joysticks for extended periods of time. Suncom Inc, 270 Holbrook Drive, Wheeling, IL 60090, 312-541-8816.

Product: Maelstrom

Price: \$15.00

Rating: Fair

This VIC-20 program is vaguely similar to 'Centipede'. You are in control of a base at the bottom of the screen and you shoot the falling robots. In addition, nuclear lightning and damaged robots add to the frenzy. Comm-Data Computer House, P.O. Box 325, Milford, MI 48042.

Product: Munchmaid (VIC-20)

Price: \$12.95

Rating: Fair

A 'PAC-MAN' type game with some slight variations. The maze is entirely surrounded by walls (so you cannot exit through the edges of the maze). The program does not use the full screen to draw the maze (instead it places the maze in the center of the screen). The joystick control is quite hard to use (and it is not the fault of the joystick). The program requires joystick and 3K memory expander. Wunderware, P.O. Box 1287, Jacksonville, Oregon 97530.

Product: Mad Painter (VIC-20)

Price: \$9.95

Rating: Fair

A different type of 'PAC-MAN' where you control a paint brush and attempt to paint the entire maze while being chased by two monsters. Occasionally you will receive a visit from an invisible monster who leaves footprints in your fresh paint. The program requires a joystick. As in the previous game Munchmaid, the joystick control is quite difficult to use. Wunderware (see address on previous page).

Product: Goblin Towers (CBM)

Price: 14 UK. pounds

Rating: Excellent

It is a starter dungeon, but do not let that fool you. It is far from easy. If you succeed in your quest, you will have learned many of the tricks needed to solve more complicated adventures. Goblin Towers can only be used with a disk (available for any CBM computer). It will run on all 32K machines (not old Rom). Supersoft, Winchester House, Canning Road, Wealdstone, Harrow, Middlesex, HA3 7SJ, England.

Product: Understanding Your PET/CBM

Price: \$16.95

Rating: Good

This is a tutorial presentation on how BASIC works on the PET. According to the introduction, "This workbook gives a series of exercises that show the new user how to use Commodore PET computer. The most effective way to use the workbook is to sit down with a PET and do the exercises as they are presented. Enough space has been provided in the workbook for you to add your own examples as you develop them". The workbook has seven chapters: Introduction, Getting Started With Your PET, String and Array Handling, Control and Logic Statements, Cassette, Miscellaneous, Difference Between the Old and New Roms. The workbook assumes the reader knows something about the BASIC language and its commands. The exercises in this workbook are good and plentiful, surrounded by a great deal of excellent explanatory text. Total Information Services, Box 921, Los Alamos, NM 87544.

Product: Travel Master

Price: \$94.95

Rating: Fair

Travel Master is a carrying case for the VIC-20. The case will hold the VIC-20 computer along with datassette recorder and power supply. The TC 2360-1 case is suited for the VIC-20 and must be ordered with the solid foam interior. Since this carrying case can be used to carry various electronic equipment, you must cut the custom design of your VIC into the solid foam. Key locks are included with the case. Southern Case Inc./TravelMaster Division, Box 28147, Raleigh, NC 27611.

Product: Dual Joystick (PET/CBM)

Price: \$31.95

Rating: Good

The Video Command Dual Joystick works like a jet fighter joystick and is rugged, reliable and lightweight. It has fast, positive response and is comfortable to hold. The features include a rapid fire button, left and right, forward and backward movements; also with 45 degree angles. It has a one (1) year warranty. Zircon International Inc., 475 Vandell Way, Campbell, CA 95008.

Product: Annihilator (VIC-20) Price: \$19.95 Rating: Excellent

Defend your planet against the hostile aliens. You have smart bombs and will receive an extra ship for every 10,000 points. Occasionally, a fuel depot will appear on the bottom of the screen. Docking with it will earn you 500 points. You must use a joystick. All machine code makes this "Defender - like" program fast and responsive. Victory Software Inc., 2027-A S.J. Russell Circle, Elkins Park, PA 191117.

Product: Kongo Kong (VIC-20) Price: \$19.95 Rating: Excellent

Climb ladders, avoid the barrels that the crazy ape is rolling at you, and ring the bell. Keyboard or joystick. Fast machine code action. Victory Software Inc., 2027-A S.J. Russell Circle, Elkins Park, PA 191117.

Product: Defender on Tri (VIC-20) Price: \$19.95 Rating: Good

Your mission is to fly your spaceship through the alien machinery, pick up the scientist and fly him to safety. The machinery is a time bomb so you have to be quick. The machine has many booby traps so be careful. You will need at least a 3K memory expander and a joystick. Nufekop, Box 156, Shady Cove, Oregon 97539-0156.

Product: Exterminator (VIC-20) Price: \$24.95 Rating: Excellent

If you like "Centipede", you will love this program. It has many of the same features as the arcade version. Excellent graphics and sound enhance the play of the game. You come across spiders, snails, fleas, and centipedes. The program runs on the 5K VIC. Use keyboard or joystick. Nufekop (see address above).

Product: Alien Panic (VIC-20) Price: \$12.95 Rating: Good

In this arcade type game (similar to Apple Panic), you are in a race against time as you race up and down ladders, digging traps while avoiding the aliens. The object of the game is to cause the aliens to fall to the bottom of the four level maze. Nufekop (see address above).

Product: 3D-Man (VIC-20) Price: \$19.95 Rating: Good

This is a "PAC-MAN" type game in a three-dimensional maze. Eat all the dots in the maze while not being eaten by the monsters that inhabit the maze. Use the radar screen to see where you are in the maze and help you find all the dots. The program requires at least a 3K memory expander plus joystick. Nufekop (see address above).

COMING UP

Programs: Lunar Trek
Air Traffic Controller
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